The Safety Sigma

Mission Readiness through Operational Safety

A PRODUCT OF THE NAVAL SCHOOL OF AVIATION SAFETY

SMS FROM A COMMAND PERSPECTIVE...AND I'M NOT TALKING ABOUT TQL

Is SMS a new TLA that is going to bring about cultural change within Naval Aviation? Is it a new program (to go along with other great programs) that will solve world hunger if we can just motivate ourselves commit to it?

Yes to the former and no to the latter. The Safety Management System (SMS) is not a "new" program. Even though the next version of the 3750 will utilize SMS pillars: Safety Policy, Safety Assurance, Risk Management, and Safety Promotion, in reality the current Naval Aviation Safety Program already has the elements of SMS. For the CO, SMS offers a formal approach and methodology to implement and improve safety programs within a command, enabling the improvement of your command's safety culture. Every squadron safety program element should fortify the pillars of SMS. When a CO, or ASO and Safety Officer, evaluates the effectiveness of an element (ASAP, Anymouse, etc) of a safety program, he or she must apply the systematic approach offered under the SMS construct.

Let's use an Anymouse program as our example. How could you use the systematic SMS approach to evaluate the effectiveness of a typical anonymous reporting program? Each pillar encourages specific, and sometimes challenging, questions.

Safety Policy. What is the CO's level of personal commitment to the Anymouse program? Has the command established a policy for how to communicate hazards identified through the use of the program? Has the importance of the program been communicated to all members? Could a Sailor or Marine on the hangar bay easily articulate the value of the Anymouse program? Does he or she understand how it identifies hazards and why that identification is so important to the CO? This ties into the CO's squadron safety policy, vision and philosophy, which is crucially important in guiding the behavior of Sailors and Marines. When violations are identified are the tenets of a "just culture" used to address them?

Safety Assurance. How often is the Anymouse program utilized? Are controls supervised? Are hazards such as unsafe acts identified and mapped against the DoDHFACS taxonomy? Is there a systematic, reliable procedure in place to identify potential preconditions, supervisory and organizational holes? Is the safety department tracking
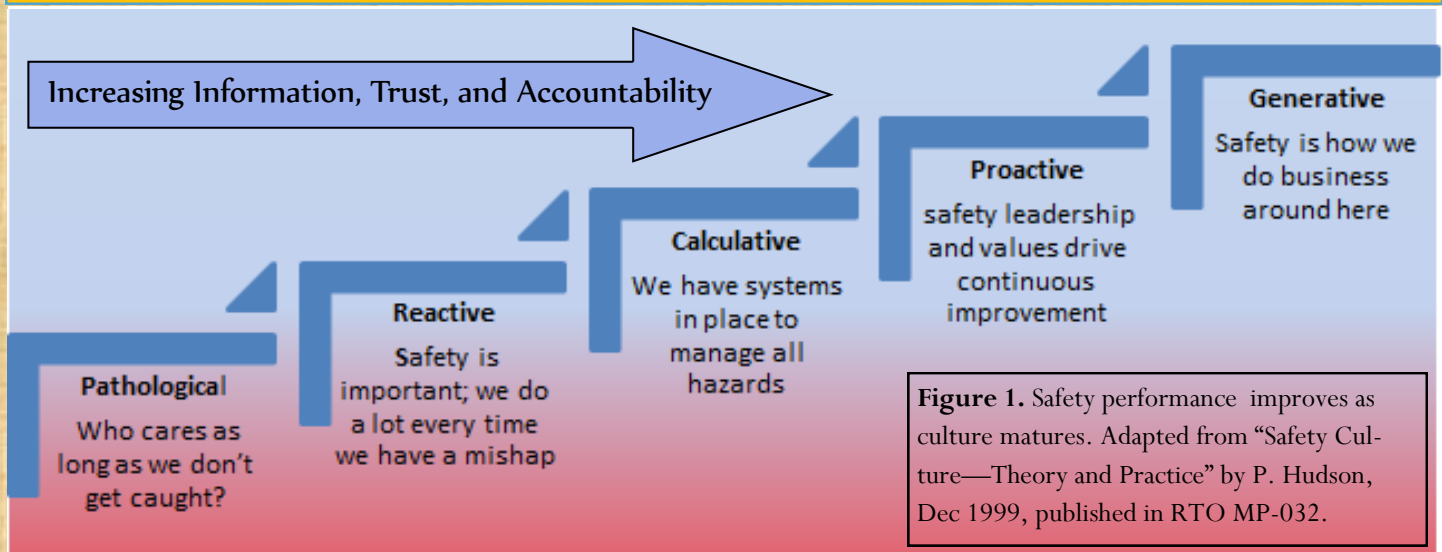
VOLUME 4, ISSUE 3

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In this issue:

Also…..

* Awards, Promotions, Hails & Bails

Increasing Information, Trust, and Accountability

Generative
Safety is how we do business around here

Proactive
safety leadership and values drive continuous improvement

Calculative
We have systems in place to manage all hazards

Reactive
Safety is important; we do a lot every time we have a mishap

Pathological
Who cares as long as we don't get caught?

Figure 1. Safety performance improves as culture matures. Adapted from "Safety Culture—Theory and Practice" by P. Hudson, Dec 1999, published in RTO MP-032.

trends? Are potential trends discussed with the commanding officer for potential policy changes?

Risk Management. When hazards are identified through the Anymouse program, is appropriate ORM applied to mitigate the risk? Who is making risk decisions and implementing the controls? Are the controls supervised? Do hazards identified demonstrate that squadron members understand and are applying time-critical risk management? Are the four ORM principles supportive of the decisions the command makes, controls he/she establishes, and the procedures instituted to mitigate hazards? Do the decision makers have the requisite authority to make the necessary changes? Is someone charged with monitoring the effectiveness of the controls, ensuring they are working as intended to balance risk and benefits?

Safety Promotion. How do you promote your Anymouse program? Is your safety department getting buy-in on the program from the rest of the squadron? Does your safety department close the loop by providing feedback regarding hazards and implemented controls at safety stand-downs? Does the CO or XO ever weigh in with comments? Are Anymouse boxes easily identified and accessible. Does your CPO mess, NCOs, JOs, and ready room promote the use of Anymouse? In other words, are people outside of the safety department beating the drum too, or is the ASO a one-man band? Is there enough "cowbell" (our preferred instrument at SAS)? We can always use more! More buy-in from a wide range of sources is the "Hoopla" we hope our ASOs are inspiring at their units.

With SMS, you can apply this same critical eye and directed questions to any of the elements of your safety program, as we just did with Anymouse. It may just elevate the safety culture of your squadron. Patrick Hudson, renowned safety researcher and writer, suggests that an organization's elevation from the calculative level (adequate programs) up to the proactive and generative levels (where safety becomes organic) requires SMS as pictured in Figure 1.

I strongly urge COs, Safety Officers and ASOs to evaluate the elements of your safety program through the systematic approach offered by the SMS construct. What a command does after the evaluation should all be focused on turning the culture into a more proactive one where time and resources are available for improvements before a mishap occurs. We talk about providing COs with tools and defenses to use against the blue threat and I think the SMS approach drives continuous improvement as one of the best defenses against blue threats we have seen in a long time.

—CAPT Jody "Caveman" Bridges, USN—Director; jody.g.bridges@navy.mil

MAN — *AEROSPACE MEDICINE IN SMS*

Civilian and military organizations across the world (including Naval Aviation) are rapidly accepting and implementing the Safety Management System (SMS) as an integral component of their operations. A SMS is a formal, leadership-directed approach to managing safety risk, which includes a systemic approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures. How does the aerospace medical field which has been around for nearly a century fit into this modern approach? Aerospace medicine deals primarily with Human Factors and it is these very human factors that are involved with the vast majority of our mishaps. SMS, by its design, is well suited to address Human Factors issues. It is proactive, with the goal of understanding safety capabilities before failures arise. It is reliant, allowing greater confidence in risk control though structured safety assurance processes. It is functional, with its emphasis on structured risk management decision making. Finally, it is reproducible through the effective dissemination of knowledge. Any aerospace medicine safety topic can be addressed via a sound safety culture provided by a working SMS. In considering how Aerospace medicine fits into a SMS one need look no further than the four pillars of SMS:

Safety Policy. This establishes leadership's commitment to safety. It covers programs and processes put in place to meet safety goals. Aeromedical examples of safety policy can be found throughout chapter eight of NATOPS, various SOPs, and the commanding officer's safety policy.

Safety Assurance. Evaluates current control strategies and adequacy of specific risk controls. The ASAP and IMSAFE programs exist so any factor that may impact human performance can be addressed in a non-punitive environment before and/or after flight operations. The ongoing Physiologic Episode program implemented to improve the understanding of oxygen-related issues in the TACAIR environment is also a good assessment tool.

Risk Management. Determines the need for, and identifies new hazards based on a formal risk assessment. The Stress Continuum Model and various fatigue-modeling programs do an outstanding job of highlighting specific human performance related issues.

Safety Promotion. Includes training, communication, and other actions to create a positive safety culture within all levels of the workforce. The Naval Aviation Survival Training Program, command flight surgeon and aeromedical safety officer briefs and the USN/USMC Safety Investigation/HAZREP programs when used for training and education fall into this area.

As SMS continues to be employed throughout the fleet, remember the concepts apply across all safety disciplines not the least of which is aerospace medicine. *Ont un vol en toute sécurité.*

—CAPT Jack "Bags" Wyland, USN—Aeromedical Instructor; john.j.wyland@navy.mil

An MV-22 Osprey takes off from the USS Kearsarge (LHD-3) while moored. —Navy photo by Mass Communication Specialist 2nd Class Corbin J. Shea

MEDIUM — *SMS AND THE ASO*

In recent Facebook page posts and Safety Sigma issues, Spock described the Four Pillars of a Safety Management System (SMS). Doc Wyland lists the four pillars in his article in this issue of the Sigma. If you look at the various individual programs in our squadrons, you'll note that you can map them fairly neatly to one or more of the four pillars. This gives the ASO a great reference for framing and examining his or her squadron's aviation safety program, or SMS. Using the four pillars approach allows the ASO to quickly grasp the overall SMS from two levels: the macro level and the micro level.

At the macro level, an ASO can look at his or her SMS and quickly determine if the "tabletop" is balanced. Spock described this attribute of the four pillars approach to framing your squadron's SMS. Are the pillars balanced? The language of the four pillars allows the ASO to quickly discern whether or not the SMS is balanced. In other words, it tells the ASO if all the pillars are contributing to squadron safety. Too much of one, or too little of another will show, and by using the four pillars approach the ASO can see the result. An ASO may observe an abundance of instructions, program statements, vision statements, checklists, worksheets, and the like. However, there may still exist a high level of non-compliance and weak oversight in the squadron. This tells an ASO right away that the table is unbalanced. In this case the squadron is long in the Safety Policy Pillar and short in the Safety Assurance Pillar. In turn, the four pillars framework allows the ASO to home in on what exactly the squadron needs. At the "higher altitude" level, the ASO can quickly determine general strengths and shortfalls in the squadron SMS.

Doc Wyland showed how the four pillars can be used at a more focused level by discussing how tailored aeromedical programs may fit into the squadron's overarching SMS. Many of the programs are there – they exist. Too often some specific programs like the aeromedical Stress Continuum Model, IMSAFE practice, and rules in NATOPS' Chapter Eight are haphazardly administered in the squadron. Sometimes this is because squadron personnel don't know where these "fit" best, and thus they are not optimally implemented. Now we are down to a very fine level of detail (the micro level) with some specific programs. By implementing these programs with an eye on how they balance your overall SMS, you will leverage them, and achieve a very tight overall SMS that is understandable to all in your squadron. The four pillars approach will help you leverage, emphasize, and "fit" individual programs into your squadron SMS better. By doing this, your overall program makes better sense to its target audience. When the program is logical, relevant, and understandable, you will likely see a high degree of compliance within your program. That is a mark of professionalism. Most importantly, it orchestrates the whole effort of the squadron in making safety a value, and reducing mishaps.

—*Mr. Bob "Opus" Hahn,—Programs Instructor;* robert.g.hahn@navy.mil

SMS TABLETOP

SAFETY POLICY · **SAFETY ASSURANCE** · **RISK MANAGEMENT** · **SAFETY PROMOTION**
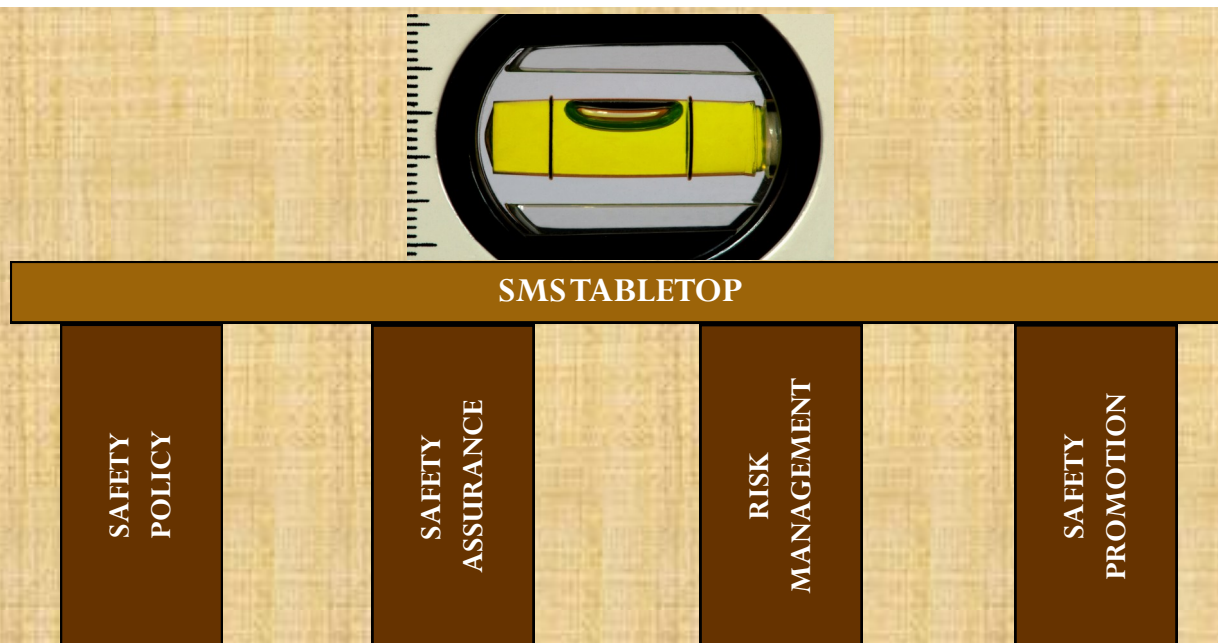
MACHINE — *CORROSION CAUSES & CONCERNS*

Many of the aluminum alloys that are used for the construction of aircraft (2000 and 7000 series of aluminum) have been specially designed to provide improved strength and toughness. Unfortunately, these improvements in strength and toughness often lead to a material that is more susceptible to the effects of corrosion.
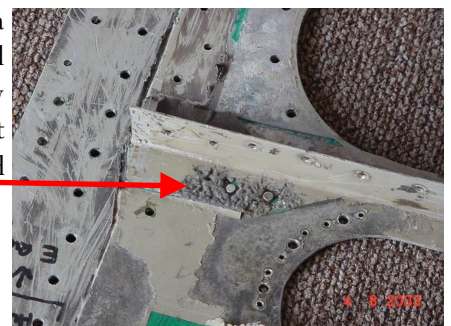
There are two fundamental methods for corrosion to occur. The first is chemical corrosion. Chemical corrosion occurs with the interaction of a metal and moisture. To prevent chemical corrosion from occurring, you simply prevent the moisture from coming in contact with the metal. How do we typically accomplish this on aircraft? We use paints, sealants or the use of a chemical conversion such as anodization. The best defense against chemical corrosion is to keep all forms of sealant intact and to perform proper and adequate fresh water rinses of the aircraft.

The second method of conversion is called electro-chemical corrosion, often referred to as galvanic corrosion. For galvanic corrosion to occur you must have two dissimilar metals, moisture, and a path for the electricity to flow. All metals have a voltage, similar to a battery. However different metals have a different voltage potential. The key to the severity of the galvanic corrosion is the difference in the voltage of the two metals. The greater the voltage difference, the more current will flow between the two metals and the magnitude of the galvanic corrosion increases. A typical galvanic series chart as shown to the left in Table 1 lists various metals in order of their voltage potential.

In essence, if two materials are listed next to each other such as titanium and graphite, their voltage is very similar and therefore galvanic corrosion between these two metals would be minimal. This is the reason we typically use titanium fasteners in carbon fiber (graphite) panels. Likewise, if we attempted to attach a piece of magnesium to a piece of platinum, the galvanic corrosion would be very extensive. Keep in mind that for galvanic corrosion to occur you must have two dissimilar metals and a path for the electrons to flow.

So now that we have a basic understanding of how corrosion occurs, why is this detrimental to my aircraft? Most of us understand that the localized area of the component that has corroded can no longer carry the stresses that occur inside the part when flight loads are applied. However, it needs to be understood that at the bottom of this localized corroded area, very abrupt and sharp irregularities occur in the metal. These irregularities are prime candidates for creating stress risers within the component. A stress riser is nothing more than a unique defect in the part that causes the stress at this location to be artificially increased. This localized increase in stress is a prime candidate for creating the origin of a fatigue failure. This is why when corroded areas of an aircraft are repaired it is very important to make sure the deepest portion of the corroded area is removed and a clean smooth finish is left.

Table 1. Galvanic Series of Metals
Anodic. Least Noble. Corroded End
Magnesium
Magnesium Alloys
Zinc
Aluminum Alloys (low strength)
Cadmium
Steel or iron
Cast iron
Stainless Steels (active)
Lead
Tin
Nickel (active)
Brasses
Copper
Bronzes
Copper-nickel alloys
Nickel (passive)
Silver
Titanium
Graphite
Gold
Platinum
Cathodic. Most Noble. Protected End

Adapted from "Fundamentals of Aircraft Material Factors" by Charles Dole, 1993.

—*Mr. Rick "Zeus" Wartman—Structures Instructor; rick.wartman@navy.mil*

"Those who cannot remember the past are condemned to repeat it." — *George Santayana*
"Insanity: doing the same thing over and over again and expecting different results." — *Albert Einstein*
"Fools learn from experience. I prefer to learn from the experience of others." — *Otto von Bismarck*
"Are we really learning from our mistakes?" — *School of Aviation Safety*

Following any Naval Aviation mishap, one or more investigators are required to get "answers" and compile them in a report containing a summary, background information, lines of evidence, rejected and accepted causal factors, and recommendations. The chain of command then gets its chop on the report through the endorsement process, agreeing or disagreeing with the key points, adding additional insight and recommendations, and providing commander's comments. Ideally, this same process occurs when a hazard short of a mishap is identified. With Class A mishaps especially, the commitment of time and money may be considerable, involving dozens of highly-paid technical experts and leaders, spanning months of fact finding, report writing, and endorsing. As warfighters and aviation professionals, we consider this sometimes monumental effort worthwhile since our goal is to prevent a recurrence, to preserve our personnel and material assets. In short, it is about saving lives and keeping our aircraft in the fight. Questions naturally follow: Is this process actually working? Are we really learning from all of these mishaps? Are the lessons learned being disseminated and digested, or are they sometimes just today's headline and tomorrow's trash?

Many Safety Investigation Report (SIR) recommendations are directed at agencies such as NAVAIR or Model Managers, requesting changes or improvements to publications, tools, equipment, or training systems. Others address supervisory issues and standard operating procedures, from the squadron level up through USN/USMC-wide mandates. While they are critically important, this short article won't address these particular "benefits" of the SIR. Rather, we will discuss the simpler issue of "safety through education." It is about sharing the "whats" and "whys" of a mishap so that we can prevent it from happening again. This is an Aviation Safety Officer-level responsibility that can provide training and knowledge to the operators: aircrew, maintainers, air traffic controllers, and ground support personnel who have the most direct impact on our mishap rates.

You may think that a point this obvious is not worth writing about. Of course this information is important and surely it is being distributed! Information moves at light-speed nowadays, and WAMHRS has replaced message traffic. The first recommendation on almost all SIRs and HAZREPs is to "brief this mishap/hazard to all . . ." From the full-blown multimedia presentation to a basic verbal brief, these education sessions are virtually cost-free, requiring little preparation by the presenter and an easily attainable captive audience. Despite all of this, indications suggest that the word is not getting out. This is evidenced by multiple repeats of very similar mishaps, sometimes in a very short time span. The recent rash of costly maintenance-related aviation ground mishaps points to this. Admittedly, when mishaps occur we can often expect them to have similar "themes." The usual suspects of op tempo, personnel shortages, aging aircraft, decreased flight hours, human factors, and others are commonly present. Using this line of reasoning, it may be inaccurate to measure the effectiveness of our information campaign based on the recurrence of mishap types. (over)

An informal measure of a mishap information campaign's effectiveness can be obtained by a simple poll of the audience. At the School of Aviation Safety, this idea was created primarily by one of our esteemed reporting instructors, LCDR "POTY" Uhlmann. Although no formal survey has been conducted, anecdotal evidence provided by numerous members of the SAS staff indicates that the results would be alarming. The general belief is that safety information (in the form of mishap and hazard briefs) is not being shared comprehensively, and that our collective memory of our past missteps is too short to prevent the next mishap. What appears to occur all too often is that an ASO student with moderate experience in a particular aircraft is unfamiliar with the circumstances involving recent Class A mishaps in his or her own platform! When presenting case studies or discussing recent mishaps involving destruction of aircraft and/or fatalities, multiple SAS instructors have received the surprising response of "I'm not really familiar with that one" or "I heard about it, but I don't really know what happened and why." Having interacted with hundreds of ASO students over the last few years, POTY contends that corporate familiarity with even the "biggest" mishaps has a shelf life of only 2.5 years. A poor sense of aircraft community mishap history contributes to a culture in which we are "doomed to repeat our past." A formal researcher might demand more compelling evidence, but perspective and experience matter. There is sufficient reason to believe we must aggressively promote improving corporate mishap report knowledge, as it can provide big benefits at little cost.

Tackling this problem requires an appropriate strategy. ASOs often face the challenge of keeping their audience awake and engaged during safety stand downs and briefs. They're usually given sufficient latitude by their chain of command, but end up regularly grappling with the issues of "what should we talk about?" and "what will actually be helpful and not be just another check in the block." Retaining the audience's focus on "the safety guy or gal" and overcoming the mentality of safety as an inconvenience or impediment will always be a challenge for the presenter. We know it well here at the School of Aviation Safety and try to use new and creative ways to overcome this obstacle every day.

Most people would agree, however, that few things grab the attention of their pilots, WSOs, ECMOs, Crew Chiefs, and maintainers like a good case study. Unlike discussions about concepts and fictional scenarios, these are real aircraft and real people just like those in your unit. They often involve well-trained people with good intentions who ended up in extraordinary circumstances or created unintended consequences. The listener can place themselves in the scenario and follow the story, and witness the sometimes disastrous results. "That could have been one of our aircraft and some of our people, or me! I could see how that happened!" Without scoffing at the mistakes of others and placing blame, the objective is still analyzing and discussing an example of "what not to do" and improving on it. In summary, we are one step closer to learning from our mistakes. As a side benefit, these presentations can be valuable training opportunities for junior Marines and Sailors who need to develop research and public speaking skills.

Information about our "mistakes" is out there. The NTSB, Naval Safety Center, and SAS staff are good resources for mishap information. ASOs are challenged to find the material and develop creative new ways to present it. Conduct an informal poll of your people and find out if that big mishap from 7 years ago still resonates with your aircrew and/or maintenance department. If not, a little recycling may be in order and you do not need to wait for the next safety stand down to talk about it. In this case, digging up the demons of the past will likely do some good. We owe it to everyone who operates, rides in, or is supported by our aircraft. If we can prevent one future mishap through an increased emphasis on past mishaps and hazards, then the effort is worth it.

Thanks to LCDR Kurt "POTY" Uhlmann of the SAS staff for his valuable insight and idea for this article.

—Major Rob "Tattoo" Orr, USMC—Investigations Instructor; robert.orr1@navy.mil

CRM — *GOODBYE OPNAV, HELLO CNAF!*

The CRM 7 skills, otherwise known as DAMCLAS/SADCLAM/(or for you calorie counters) MCSALAD has a new boss! On December 21, 2012, COMNAVAIRFOR 1542.7 replaced OPNAV 1542.7C. What does that mean? Administratively, it means a lot. How we instruct and record has changed considerably. However, the awesomeness of the CRM 7 skills remains the same.

The most notable administrative change is that *"initial T/M specific CRM ground training shall be conducted in all Chief of Naval Air Training (CNATRA) squadrons and at the Fleet Replacement Squadrons (FRS) prior to first flight and is required for all students, instructors under training and any NATOPS qualified aircrew members without documented T/M specific ground training as defined by OPNAVINST 3710.7 series."* This paragraph increased the workload of almost every CRM Program Manager fleet-wide. It put a lot of pressure on the available squadron CRMIs because they could no longer fill the required initial ground training with a Facilitator. One of our resolutions for FY13 was to conduct twice as many Mobile Training Teams (MTTs) than were completed in FY12. From February to September 2013, we conducted CRMI training in MCAS Miramar, NAS North Island, NAS Jacksonville, NAS Norfolk, and MCAS New River. That resulted in approximately 130 newly trained CRMIs. Combine that with our 181 NAS Pensacola classroom-trained students and you get a total of 311 new CRMIs for FY13 (drop mic…exit stage left).

The CNAF instruction addresses issues that previous doctrine did not, such as *"CRMI/CRMFs conducting the training meet their own annual requirements."* It also requires all PMs to be graduates of the CRMI course, which was considered a best practice prior to December 12, 2012. A common fleet question was "What separates an 'I' from an 'F'?" In response, CNAF 1542.7 paragraph 6 (g) specifies the different required training an Instructor and a Facilitator should receive. It even pulls civilians and Unmanned Aircraft Systems (UAS) into the fold.

Now, let's look at our record keeping. All NATOPS training jackets <u>shall</u> be updated with CNAF 1542.7 Enclosure (3). The updated enclosure can be downloaded from our website (address below). This ensures CRM training is created and tailored to identify the specific CRM and mission differences in multiple series aircraft in the Naval Aviation inventory. *"Records created as a result of this instruction, regardless of media format, shall be managed per SECNAV M-5210.1C."* This is 180-degrees out from the previous instruction which gave CRM records exemption status per SECNAVINST 5214.2.

Lots of administrative changes for the better were made when CNAF 1542.7 was released. Expect even better things when CNAF 1542.7A comes out this fiscal year. When the CNAF instruction was released in December 2012, we fielded many questions from the fleet. As a result, we placed a FAQ page on our website. Through two-way communication with the Program Managers we in CRM were able to take onboard some excellent fleet inputs for the revision. Our office took all of the constructive recommendations from these two sources and made a solid draft. The final product is under review by CNAF and will be available on our website once it is signed.

There will be a CRM Operational Readiness Review (ORR) sometime between April and June 2014. We plan to conduct a disciplined, systematic, documented, performance-based examination of facilities, equipment, personnel, procedures, and management control systems in order to ensure that our program can be operated within its approved envelope as defined by CNAF 1542.7. All Community Model Mangers, Program Managers, and stake holders are highly encouraged to attend. Once the time and date of the ORR is solidified that information will be pushed to the fleet.

LCDR Al "Judge Red" Toney, USN—CRM Instructor; alvin.d.toney@navy.mil www.netc.navy.mil/nascweb/crm/crm.htm

Fall Milestones in the U.S. Sea-going Services

- *October 16, 1943: U.S. Navy accepts its first helicopter, a Sikorsky YR-4B at Bridgeport, CT.*
- *October 11, 1951: A Marine battalion was flown by transport helicopters to a frontline combat position for the first time, when HMR-161 lifted 3d Battalion, 7th Marines during Operation Bumblebee, Korea.*
- *November 22, 1968: A DC-8 with 107 passengers vanished from radar on approach to San Francisco International Airport. With 3/4-mile visibility and 300 foot ceilings, a USCG helo located the aircraft 6100 yards from the runway with people in the water. Within 7 minutes, 2 additional helicopters and a USCG boat were on the scene. All 107 persons were saved.*

SEMPER PARATUS — *EXPERIENCE DEFICITS AND HFACS*

Dr. Scott Shappell, coauthor of DoDHFACS, visited the School of Aviation Safety this past summer to share two solid days of his knowledge and experience in all things human factors. Our faculty spent a lot of time scribbling notes, but one quote of his in particular struck a chord: "Early outs (high year tenure) lead to replacement by less experienced people and lead to more decision-making errors." You could also see an argument for increased skill-based errors in this scenario. It all makes perfect sense, common sense actually, that needs to be taken seriously regarding safety. During this calendar year, we have seen Coast Guard message traffic relating to waivers for remaining obligated service, temporary early retirement authorization, decreased opportunities for selection on promotion boards and high-year tenure. We are no doubt going to lose experienced personnel. Speaking in DoDHFACS lingo, we have uncovered an organizational influence that has the potential to create supervisory deficits and force preconditions which can lead to dangerous acts. We are not accustomed to moving this direction in the HFACS taxonomy; we usually just apply it to a mishap analysis and work from the Act upward. Workforce management policies are beyond the sphere of influence of anyone wearing a flight suit, but their effects can fall right into our laps. If what Dr. Shappell says is true, then we don't need to wait for a mishap to unearth the hazard. We've already been warned of its existence and potential. A generative safety program should prepare for it, as some of our air stations are already feeling the effects.

How do we prepare for a potential future shortage in experience and knowledge on our hangar decks and in our wardrooms? The service's workload isn't likely to decrease, so our ability to do our own jobs well, manage ourselves and others, and lead in general must improve. Replacing the 20+ years of experience that we lose at the end of every 30-minute retirement ceremony doesn't happen overnight. We can speed up the process though. Major "Tattoo" Orr talks extensively about mishap education earlier in this newsletter. We can develop 100+ years of experience while having less than 20 years time-in-service if we commit to mishap education. FSOs have to aggressively feed this material to both the fixers and the fliers. People like me need to more aggressively feed the FSOs with information.

If I had to guess what group of HFACS preconditions would be most likely to support the errors we're expecting to see in the future (if we don't get ahead of the problem, that is), I'd say it would be "Coordination/Communication/Planning Factors." This is where we find issues related to CRM, Maintenance Resource Management, and deficiencies related to general experience. CRM already gets a lot of attention, but MRM needs to be robust. We've already experienced an uptick in high-profile MRM incidents (as have the DOD services) which occurred too early to have any correlation with or causation from personnel experience deficits. That means there may already be another hazard at play. MRM, like CRM, can have a synergistic effect that can help trap the errors that would otherwise develop from an individual's inexperience as a pilot, wrench turner or supervisor. Mentorship can play as big of a role as we want it to here as well.

The three things needed to make a good decision (and help avoid decision-making errors) are: information, knowledge, and experience. We need to ensure our decision makers have all three. —Adapted from Dr. Shappell's lecture to SAS staff

What about the HFACS Supervision level? Everyone needs quality supervision, but those less-experienced need more of it. We have to look at the Supervision piece from at least two directions though: (1) supervision needs to be active and worthwhile, (2) the supervisors themselves may be the problem. I would charge anyone in a supervisory role to scan the supervision tier (next page) from an HFACS flip-book (your FSO has one) from time to time to honestly ask themselves certain questions. Could any of these nanocodes apply to how I routinely do business? What am I doing to prevent this nanocode from applying to my job as the CO, OPS, or EO when the next mishap happens? What do I need to improve on as a supervisor to help prevent the next mishap? The HFACS nanocodes may encourage some ideas. (over)

The Navy and Marine Corps' "Maintenance Climate & Assessment Survey" system suggests interventions to help deal with some of the challenges due to manning constraints and experience deficits. This is not an exhaustive list:

- Reduce extraneous tasking and learn to say no to certain external requests; be aware of collateral mission creep.

- Leaders can't drop their packs several months away from retirement; encourage them to finish strong and pass on all they know to their relief.

- Ensure adequate maintenance leadership and experience is available on all shifts: day, nights, and mids. Fight for the proper manning from the detailers if you are short in any rate or specialty.

- Avoid the tendency to relax standards when "doing more with less." Qualification processes must always be robust and honest.

- You may have an open-door policy, but that doesn't guarantee hard-charging pilots or mechanics are actually going to use it. Leaders have to be the ones to ask the questions and start the conversations sometimes.

The cost savings of high-year tenure programs and early retirements can ultimately result in greater overall costs if we let them. Decision-making and skill-based errors cost us a lot of money. Few things are more costly than a mishap in our service. These will be challenging times for leaders and anyone interested in maintaining the operational excellence that comes from safe maintenance and safe operations.

—*LT Jim "Pugsly" Bates, USCG*—
Coast Guard Instructor;
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Inadequate Supervision
- Command oversight inadequate
- Failured to ensure proper role-modeling
- Failed to provide proper training
- Failured to provide appropriate policy/guidance
- Personality conflict with supervisor
- Lack of supervisory responses to critical information

Failure to Correct Known Problem
- Failed to identify/correct risky behavior
- Failed to correct unsafe practices

Planned Inappropriate Operations
- Directed mission beyond personnel/equipment capabilities
- Personnel mismatch
- Selected individual with lack of current experience
- Selected individual with limited overall experience
- Selected individual with lack of proficiency
- Performed inadequate risk assessment
- Authorized unnecessary hazard

Supervisory Violations
- Failure to enforce existing rules
- Allowing unwritten policies to become standard
- Directed individual to violate existing regulations
- Authorized unqualified individuals for mission

HFACS Supervision bins and nanocodes

To the left is the newly-designed, official Naval School of Aviation Safety crest. The Greek "Sigma" has long stood for the school's charter to be the "sum of all safety knowledge." The seven stars signify the seven critical skills of CRM. The four aircraft silhouettes represent the four major aircraft types (rotary-wing, tactical jet, maritime heavy, and tilt-rotor/VSTOL. The golden rope is a traditional border for U.S. Navy patches.

SPECIAL POINTS OF INTEREST

"DOC" BANK MEMORIAL DISTINCTION: STUDENT RECIPIENTS

The *Milt "Doc" Bank Memorial Distinction*, recognizes the student or students in each graduating ASO class who best exemplify the characteristics of the late, great Milt "Doc" Bank, PhD: motivation, intelligence, imagination and aptitude as a potential future ASO Instructor. The recipient of this award for ASO Class 13-6 was LT Ron Burris from HSM-72. The recipient for ASO Class 13-7 was LCDR Ali Ghafari from VFA-97. Congratulations to all!

HAILS AND BAILS

The SAS staff would like to congratulate LCDR "POTY" Uhlmann on his upcoming retirement from active service. His humor, candor, and dedication to Naval Aviation safety will be sorely missed. His replacement as a Reporting instructor is LCDR Dan "Dauber" Kelly who joins us from TACRON-22. CDR Gerald "Pee-Wee" Hermann recently joined the staff as well after serving with OPNAV N98. He will serve SAS as a Programs instructor.

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